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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/652,862	08/29/2003	Francesco Ciovacco	02-AG-228/RR	1003

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EXAMINER	
RAMILLANO, LORE JANET	
ART UNIT	**PAPER NUMBER**
1743	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/05/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/652,862	CIOVACCO ET AL.	
	Examiner	Art Unit	
	Lore Ramillano	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *12 October 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *8/29/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. Claims 5 and 11 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 5 and 11 are not clear because the limitation, "the air" does not clearly further limit claims 3 and 7 since claims 3 and 7 do not recite language regarding "the air." Did applicant intend to have claims 5 and 11 to further limit claim 1 instead?

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. **Claims 1-31** are rejected under 35 U.S.C. 102(a) as being anticipated by Singh et al. ("Singh," WO 02/23585) and in light of Levinstein et al. ("Levinstein," US 4256534) and Kyotani (US 6409802).

As to claims 1-24, Singh teaches a method of detecting a leak and a computer readable medium comprising the following steps: establishing a plasma inside a reactor, the plasma having a composition suitable to generate at least one predetermined compound when reacting with air; detecting a light emission of the plasma; and analyzing the light emission to identify the presence of the at least one predetermined compound. (i.e. p. 3, line 25 to p. 5, line 15).

Singh further teaches the following regarding before establishing the plasma inside the reactor: processing at least one wafer of semiconductor material, removing the least one wafer from the reactor, and cleaning the reactor; and the air includes nitrogen, the at least one predetermined compound (i.e. CN) resulting from the reaction of nitrogen with the plasma. (i.e. p. 4, line 4 to p. 5, line 6).

Singh further teaches the following regarding establishing a plasma inside a reactor: providing a flow of a gas including a fluorocarbon constituent, and keeping the gas at a pressure substantially in the range from 50 mtorr to 110 mtorr. (i.e. p. 4, line 12 to p. 5, line 6).

As to claims 25-28, Singh also discloses an apparatus comprising: means for establishing a plasma inside a plasma reactor, the plasma having a composition suitable to generate at least one predetermined compound when reacting with air; means for detecting a light emission of the plasma; and means for analyzing the light emission to identify the presence of the at least one predetermined compound for detecting a leak of external air into the plasma reactor. (i.e. p. 3, line 25 to p. 5, line 15).

Singh further discloses the following regarding means for establishing the plasma inside the reactor: means for providing a flow of a gas including a fluorocarbon constituent, and means for keeping the gas at a pressure substantially in the range from 50 mtorr to 110 mtorr. (i.e. p. 4, line 12 to p. 5, line 6).

As to claims 29-31, Singh also discloses a system comprising: a plasma reactor; and an apparatus, coupled to the plasma reactor, for detecting a leak of external air into the plasma reactor, the apparatus comprising: means for establishing a plasma inside a

plasma reactor, the plasma having a composition suitable to generate at least one predetermined compound when reacting with air; means for detecting a light emission of the plasma; and means for analyzing the light emission to identify the presence of the at least one predetermined compound for detecting a leak of external air into the plasma reactor. (i.e. p. 3, line 25 to p. 5, line 15).

Singh further discloses the following regarding means for establishing the plasma inside the reactor: means for providing a flow of a gas including a fluorocarbon constituent. (i.e. p. 5, lines 1-6).

Singh inherently teaches or discloses a source of power substantially in the range from 400W to 600W because Singh's invention inherently utilizes power to function and Levinstein teaches that the plasma etching process requires a power of 400-600 watts (i.e. column 8, lines 62-64).

Furthermore, Singh inherently teaches or discloses, with regarding to the means for establishing the plasma inside the reactor, that the means for providing a flow of a gas inherently includes a fluorocarbon constituent, such as CF4, and a hydrocarbon constituent, such as CH4, since Kyotani discloses that etching of a silicon wafer or the like is commonly performed utilizing such constituents. (i.e. column 1, lines 51-60).

4. **Claims 1-31** are rejected under 35 U.S.C. 102(b) as being anticipated by Sui et al. ("Sui," WO 00/03421).

As to claims 1-24, Sui teaches a method of detecting a leak and a computer readable medium (i.e. p. 11-16, Fig. 3) comprising the following steps: establishing a plasma inside a reactor (i.e. 56, Fig. 2), the plasma having a composition suitable to

generate at least one predetermined compound when reacting with air; detecting a light emission of the plasma; and analyzing the light emission to identify the presence of the at least one predetermined compound. (i.e. p. 16, line 16 to p. 18, line 35).

Sui further teaches the following regarding before establishing the plasma inside the reactor: processing at least one wafer of semiconductor material, removing the least one wafer from the reactor, and cleaning the reactor; and the air includes nitrogen, the at least one predetermined compound (i.e. CN) resulting from the reaction of nitrogen with the plasma. (i.e. p. 16, line 16 to p. 19, line 31).

Sui further teaches the following regarding establishing a plasma inside a reactor: providing a flow of a gas including a fluorocarbon constituent (i.e. CF4), and keeping the gas at a pressure substantially in the range from 50 mtorr to 110 mtorr and applying a source power substantially in the range from 400W to 600W; or providing a flow of a gas including a hydrocarbon constituent (i.e. CH4), keeping the gas at a pressure substantially in the range from 50 mtorr to 110 mtorr and applying a source power substantially in the range from 400W to 600W. (i.e. p. 10, lines 6-14; p. 16, line 30 to p. 17, line 7).

As to claims 25-28, Sui also discloses an apparatus comprising: means for establishing a plasma inside a plasma reactor, the plasma having a composition suitable to generate at least one predetermined compound when reacting with air; means for detecting a light emission of the plasma; and means for analyzing the light emission to identify the presence of the at least one predetermined compound for

detecting a leak of external air into the plasma reactor. (i.e. Figs. 2 and 3; p. 16, line 16 to p. 18, line 35).

Sui further discloses the following regarding means for establishing the plasma inside the reactor: means for providing a flow of a gas including a fluorocarbon constituent (i.e. CF4), and means for keeping the gas at a pressure substantially in the range from 50 mtorr to 110 mtorr and means for applying a source power substantially in the range from 400W to 600W; or means for providing a flow of a gas including a hydrocarbon constituent (i.e. CH4), means for keeping the gas at a pressure substantially in the range from 50 mtorr to 110 mtorr and means for applying a source power substantially in the range from 400W to 600W. (i.e. p. 10, lines 6-14; p. 16, line 30 to p. 17, line 7).

As to claims 29-31, Sui also discloses a system comprising: a plasma reactor; and an apparatus, coupled to the plasma reactor, for detecting a leak of external air into the plasma reactor, the apparatus comprising: means for establishing a plasma inside a plasma reactor, the plasma having a composition suitable to generate at least one predetermined compound when reacting with air; means for detecting a light emission of the plasma; and means for analyzing the light emission to identify the presence of the at least one predetermined compound for detecting a leak of external air into the plasma reactor. (i.e. Fig. 2; p. 16, line 16 to p. 18, line 35).

Sui further discloses the following regarding means for establishing the plasma inside the reactor: means for providing a flow of a gas including a fluorocarbon

constituent (i.e. CF4), and a hydrocarbon constituent (CH4). (i.e. p. 16, line 30 to p. 17, line 7).

5. **Claims 1-3, 13-15, 25-26, and 29-30** are rejected under 35 U.S.C. 102(b) as being anticipated by Zajac (US 4857136).

As to claims 1-3 and 13-15, Zajac teaches a method of detecting a leak and a computer readable medium (i.e. 23, Fig. 1) comprising the following steps: establishing a plasma inside a reactor (i.e. 11, Fig. 1), the plasma having a composition suitable to generate at least one predetermined compound when reacting with air; detecting a light emission of the plasma; and analyzing the light emission to identify the presence of the at least one predetermined compound. (i.e. column 2, line 6 to column 3, line 28).

Zajac further teaches the following regarding before establishing the plasma inside the reactor: processing at least one wafer of semiconductor material, removing the least one wafer from the reactor, and cleaning the reactor (i.e. column 2, line 6 to column 3, line 28).

Zajac further teaches the following regarding establishing a plasma inside a reactor: providing a flow of a gas including a fluorocarbon constituent (i.e. column 3, lines 24-28).

As to claims 25-26, Zajac also discloses an apparatus comprising: means for establishing a plasma inside a plasma reactor, the plasma having a composition suitable to generate at least one predetermined compound when reacting with air; means for detecting a light emission of the plasma; and means for analyzing the light emission to identify the presence of the at least one predetermined compound for

detecting a leak of external air into the plasma reactor. (i.e. column 2, line 6 to column 3, line 28).

Zajac further discloses the following regarding means for establishing the plasma inside the reactor: means for providing a flow of a gas including a fluorocarbon constituent (i.e. column 3, lines 24-28).

As to claims 29-30, Zajac also discloses a system comprising: a plasma reactor; and an apparatus, coupled to the plasma reactor, for detecting a leak of external air into the plasma reactor, the apparatus comprising: means for establishing a plasma inside a plasma reactor, the plasma having a composition suitable to generate at least one predetermined compound when reacting with air; means for detecting a light emission of the plasma; and means for analyzing the light emission to identify the presence of the at least one predetermined compound for detecting a leak of external air into the plasma reactor. (i.e. column 2, line 6 to column 3, line 28).

Zajac further discloses the following regarding means for establishing the plasma inside the reactor: means for providing a flow of a gas including a fluorocarbon constituent (i.e. column 3, lines 24-28).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lore Ramillano whose telephone number is (571) 272-7420. The examiner can normally be reached on Mon. to Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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